

# Laparoscopic Repair of Intersigmoid Hernia: A Case Report

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## Abstract

Internal hernias are a rare cause of bowel obstruction, and they have many classifications and can be congenital or acquired. Generally, the preoperative diagnosis is challenging because of their nonspecific signs and symptoms, but often require emergent surgery because of their complications. We present a case of a 28-year-old female who presented with symptoms of acute small bowel obstruction, following a normal vaginal delivery. She had no previous history of any abdominal surgeries or trauma. Routine blood investigations and imaging were performed and then the patient was taken for a diagnostic laparoscopy where the herniated bowel was extracted from the defect, and the defect was closed. The post-operative course was uneventful.

**Keywords:** internal hernia: small bowel obstruction: laparoscopy: acute abdomen

## INTRODUCTION

Internal hernias are defined as a protrusion of a viscus into a retroperitoneal fossa or a foramen in the abdominal cavity, which can be classified as congenital or acquired [1]. Myers classified internal hernias according to their location: paraduodenal (53%), pericoecal (13%), within foramen of Winslow (8%), transmesenteric and transmesocolic (mesocolic) (8%), intersigmoid (6%), and retroanastomotic (5%), furthermore, the other 7% are paravesical and pelvic hernias [2]. The most common cause of internal hernias is congenital abnormalities, which occur due to a defect during internal organ rotation in the time of embryological development. Other known causes include iatrogenic due to abdominal surgery, especially seen with procedures in which a Roux-en-Y was constructed, atrophy of omentum, and dilation of the foramen of Winslow [3]. Usually, patients with internal hernias are asymptomatic or can present with non-specific signs and symptoms, such as intermittent abdominal pain, which is position related, associated with nausea or vomiting after large meals [4]. In addition, patients with internal hernia can present with biliary colic, obstructive jaundice, pancreatitis, or at times a palpable abdominal mass. However, some patients can present as an acute abdomen due to

small bowel obstruction, occurring in 0.2 – 0.9% of all cases diagnosed with internal hernias, which requires emergent interference in the operating theatre as these cases have a mortality rate of up to 50% [1,5]. Whether the patient presents with symptoms or not, CT is the gold standard diagnostic method establishing the location of the defect and any congenital anomalies if present. Finally, treatment of internal hernias involves closure of the defect with sutures or administration of mesh via open or laparoscopic approaches. In this article we present a case of acute abdomen caused by an internal hernia (intersigmoid).

## CASE

A 28-year-old previously healthy female presented to the emergency department with a 4-day history of epigastric pain, which was increasing in severity and was associated with vomiting, constipation, and abdominal distention. This all started after normal vaginal delivery of her second child. Both her children were the result of normal vaginal delivery and she had no history of previous abdominal surgeries or trauma. The patient was vitally stable and clinical examination revealed epigastric tenderness with signs of muscle guarding, rebound tenderness and poor bowel movements. Laboratory findings showed leucocytosis,

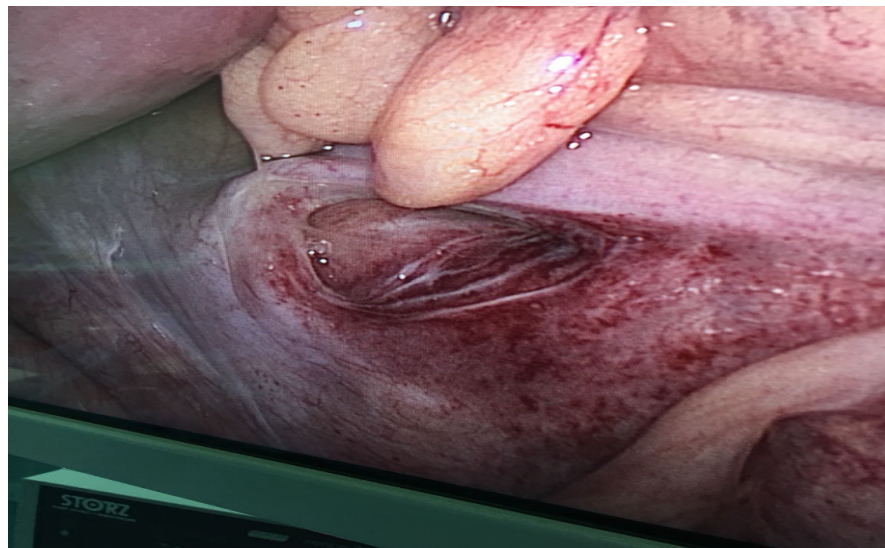
## Laparoscopic Repair of Intersigmoid Hernia: A Case Report

predominantly neutrophilia, and her lactate was 0.6 mmol/L. Abdominal x-ray showed multiple air fluid levels, and CT of the abdomen and pelvis revealed obstruction proximal to the ileum most likely due to adhesions. Therefore, the patient underwent diagnostic laparoscopy. Intraoperatively, dilated small bowel loops proximal to the ileocecal junction, around 60cm in length, and collapsed colon distal to it were

found, as well as an intersigmoid defect, about 2cm in diameter, with small bowel herniated through it [fig.1 and fig.2]. In addition, the appendix was normal, the peritoneal cavity was filled with serous fluid. The herniated bowel was extracted from the defect [fig. 3], and the defect was closed with running sutures of 4-0 Vicryl. Postoperative course was uneventful, and the patient was discharged from the hospital on day 7.



**Fig 1. and Fig 2.** Dilated small bowel loops proximal to the ileocecal junction, around 60cm in length, and collapsed colon, as well as an intersigmoid defect, about 2cm in diameter, with small bowel herniated through it.



**Fig 3.** Intersigmoid defect 2cm in diameter after herniated bowel was extracted from it

### DISCUSSION

Almost 5% of all internal hernias are sigmoid mesocolon hernias, making it a very infrequent condition [6]. Benson et al. [7] classified internal hernias involving the sigmoid mesocolon into three categories: (1) intersigmoid hernia, in which the intestine is incarcerated in a fossa at the site of attachment of the sigmoid mesocolon; (2) transmesosigmoid hernia, in which the intestine is incarcerated in a patent defect in the left and right leaves of the sigmoid mesocolon; and (3) intramesosigmoid hernia, in which the intestine is incarcerated in a defect of the left or right leaf of the sigmoid mesocolon. In Benson et al.'s study [7], 88.2% of sigmoid mesocolon hernias were intersigmoid hernias.

Risk factors for sigmoid mesocolon hernias include increased length of the mesentery of the small intestine, entrapment of the small intestine in the pelvic cavity by adhesions, and presence of an opening in the intersigmoid fossa caused by upward traction or inversion of the sigmoid mesocolon resulting from sigmoid colon adhesions[8,9]. In this case the cause of the intersigmoid internal hernia was unknown. Nonetheless, pregnancy and normal vaginal delivery could be associated with the impairment of the mesenteric wall.

Patients with internal hernias almost always suffer from vague abdominal discomfort; therefore, they usually do not seek medical help or are misdiagnosed until the symptoms become more extreme as the hernia progresses to acute obstruction or strangulation. In a study conducted by Tong et al. it was found that chronic symptoms can last from 2 months to 20 years before the patient is correctly diagnosed. However, approximately 33% of all cases have no symptoms followed by suddenly developing acute abdomen as in our case, who denied suffering from any previous abdominal symptoms [10]. Hsiu-Ping Fan et al. conducted a study over 10 years to define the indicators of bowel ischemia caused by congenital or acquired internal hernia and the results showed that abdominal rebound tenderness, advanced leukocytosis ( $>18\,000/\text{mm}^3$ ), or a high level of manual band form ( $>6\%$ ) were the positive predictive factors for bowel ischemia, whereas a history of chronic intermittent abdominal pain was a negative indicator[11]. Thus, in patients

presenting with these positive predicative factors, delaying exploratory laparoscopy or laparotomy with imaging studies is not recommended.

When patients present with vague abdominal symptoms CT scan is the gold standard tool for diagnosis. It has a specificity of 76%, sensitivity of 63%, and accuracy of 77% for intersigmoid hernias [12]. Visible CT scan's signs may include displacement of the mesenteric trunk toward the hernia, elongation, grouping and engorgement of mesenteric vessels, abnormal encapsulation of intestinal loops in the peritoneal cavity, stasis and absence of intraluminal contrast progression associated with distention content [13,14]. In contrast, when patients present with signs and symptoms of acute abdomen diagnosis is reached by exploratory laparotomy or laparoscopy[15].

Treatment of internal hernias involves closure of the defect with sutures or administration of mesh via open or laparoscopic approaches. Lately, laparoscopic surgery for patients with intestinal obstruction has been introduced as minimally invasive surgery, and 14 cases of its use to treat intersigmoid hernia have been reported so far[16]. The indications for laparoscopic surgery to treat intestinal obstruction include: (1) the patient is not in a state of shock, with stable hemodynamics; (2) no widespread peritonitis or intra-abdominal abscess; (3) obstruction of the proximal small intestine; (4) non-severe or localized intestinal dilation; (5) severe adhesions are not anticipated; (6) intestinal obstruction due to a band; (7) intestinal obstruction following acute appendicitis or benign hysterectomy or first obstruction of the small intestine; and (8) obstruction of the small intestine in patients with no previous surgical history [17-19]. Compared with laparotomic surgery, laparoscopic surgery has the following advantages: (1) less postoperative pain; (2) early recovery of intestinal function; (3) shorter hospitalization time; (4) earlier return to society; (5) fewer wound-related complications; and (6) less recurrence of adhesions [20, 21].

### CONCLUSION

In conclusion internal hernias can be very difficult to diagnose as patients may remain asymptomatic for many years and only present to the hospital when it causes complications such as bowel obstruction. Ideally, the patient should be diagnosed preoperatively; however, since patients mainly

present with no symptoms or vague abdominal symptoms, most cases are diagnosed intraoperatively. Although imaging tests play a huge role in establishing the diagnosis, exploratory surgery is often necessary when clinical features are unclear. Due to the many advantages of laparoscopic surgery over the conventional laparotomy, laparoscopic surgery should be the first option for the treatment of internal hernias when there are no contraindications for laparoscopy.

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## Laparoscopic Repair of Intersigmoid Hernia: A Case Report

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